IN THE CLAIMS

1-24 (Cancelled).

25. (Currently Amended) A method comprising the steps of:

forming a mask over an optical fiber, the optical fiber having a core surrounded by a cladding, the mask having a single opening;

exposing the opening to light ~~radiation~~ such that a refractive index of a portion of the fiber corresponding to the opening is changed to form a Fabry-Perot cavity, whereby light propagating in the optical fiber after the Fabry-Perot cavity is formed is reflected at a first end and at a second end of the portion and propagates backward along the optical fiber, light reflected at the first end of the portion interfering with light reflected from the second end of the portion such that changes in a length of the portion result in observable changes in an amplitude of such reflected light.

26. (Original) The method of Claim 25, wherein the exposing step results in a change in a refractive index of the core.

27. (Original) The method of Claim 25, wherein the exposing step results in a change in a refractive index of the cladding.

28. (Original) The method of Claim 25, wherein the exposing step results in a change in a refractive index of the core and the cladding.

29. (Original) The method of Claim 25, wherein the exposing step is performed using a laser beam.

30. (Original) The method of Claim 25, wherein the fiber is doped with germanium.

31. Cancelled.

32. (Withdrawn, Currently Amended) A method comprising the steps of:

launching an optical pulse into an optical fiber, the optical fiber having a plurality of Fabry-Perot ~~optical~~ sensors formed therein, the Fabry-Perot ~~optical~~ sensors being spaced apart, the pulse having a duration less than a time required to travel a smallest distance between the two most closely spaced sensors; and

measuring amplitudes of backward-propagating reflection peaks in the fiber at a plurality of times, each of the times corresponding to a location of one of the plurality of Fabry-Perot ~~optical~~ sensors.

33. (Withdrawn) The method of Claim 32, further comprising the steps of:

measuring an amplitude of background noise in the fiber at a time close to each of the reflection peaks; and

calculating a ratio of each reflection peak amplitude to a corresponding amplitude of background noise.

34-35. Cancelled.

36. (Withdrawn) The method of Claim 32, wherein the plurality of optical sensors are formed using the method of Claim 25.

37-38. Canceled.

39. (Withdrawn, Currently Amended) The method of Claim 38, wherein the Fabry-Perot ~~optical~~ sensors are designed such that a cavity length varies only over a quasi-linear range of a half fringe under conditions to which the Fabry-Perot ~~optical~~ sensors are exposed.

40. (Currently Amended) A method comprising the steps of:

forming a plurality of masks over an optical fiber, the optical fiber having a core surrounded by a cladding, each of the masks having a single opening, the openings of the plurality of masks being spaced apart;

exposing each of the openings to light ~~radiation~~ such that a refractive index of a corresponding portion of the optical fiber is changed to form a Fabry-Perot cavity, whereby light propagating in the optical fiber after the Fabry-Perot cavities are formed is reflected at a first end and at a second end of each of the Fabry-Perot cavities ~~portions~~ and propagates backward along the optical fiber, light reflected at the first end of each Fabry-Perot cavity ~~portion~~ interfering with light reflected from the second end of each Fabry-Perot cavity ~~portion~~ such that changes in a length of the Fabry-Perot cavity ~~portion~~ result in observable changes in an amplitude of such reflected light;

launching an optical pulse into the optical fiber, the pulse having a duration less than a time required to travel a smallest distance between the two most closely spaced Fabry-Perot cavities;

measuring amplitudes of backward-propagating reflection peaks in the fiber at a plurality of times, each of the times corresponding to a location of one of the Fabry-Perot cavities ~~portions of the optical fiber whose refractive index was changed during the exposing step~~.

41. (Currently Amended) A method comprising the steps of:

performing the steps of Claim 25 to form a first Fabry-Perot sensor in an optical fiber;

repeating the steps of Claim 25 at least once such that a plurality of sensors are formed in the optical fiber; the plurality of sensors being spaced apart;

launching an optical pulse into the optical fiber, the optical fiber having a plurality of optical sensors formed therein, the pulse having a duration less than a time required to travel a smallest distance between the two most closely spaced sensors; and

measuring amplitudes of backward-propagating reflection peaks in the fiber at a plurality of times, each of the times corresponding to a location of one of the plurality of optical sensors.

42. (New) The method of Claim 40, wherein the Fabry-Perot cavitiess are designed such that a cavity length varies only over a quasi-linear range of a half fringe under conditions to which the Fabry-Perot cavities are exposed.

43. (New) The method of Claim 41, wherein the Fabry-Perot sensors are designed such that a cavity length varies only over a quasi-linear range of a half fringe under conditions to which the Fabry-Perot sensors are exposed.